

What is claimed is:

1. A method of activating a plug located within a subterranean well bore comprising the step of introducing a dart into a receiving configuration within the plug, wherein the dart comprises a mandrel and a foam body attached to the mandrel.
2. The method of claim 1 further comprising the step of applying a differential pressure across the dart to force the dart to travel through the well bore.
3. The method of claim 1 further comprising the step of applying a differential pressure across the plug to activate the plug.
4. The method of claim 1 wherein the mandrel of the dart comprises a drillable material.
5. The method of claim 4 wherein the drillable material is selected from the group consisting of: aluminum, plastic, brass, a phenolic, a high-strength thermoplastic, glass, and a composite.
6. The method of claim 1 wherein the dart further comprises an elastic tether attached to the mandrel and to the foam body.
7. The method of claim 6 wherein the elastic tether is made from a material selected from the group consisting of: natural rubber, a synthetic elastomeric rubber, polyurethane, and elastic fabrics.
8. The method of claim 1 wherein a leading end of the mandrel comprises a nosepiece, the nosepiece being configured to sealingly engage within a receiving configuration in the subterranean plug.
9. The method of claim 8 wherein the nosepiece comprises a drillable material.
10. The method of claim 9 wherein the drillable material is selected from the group consisting of: aluminum, plastic, brass, a phenolic, a high-strength thermoplastic, glass, and a composite.
11. The method of claim 8 wherein the nosepiece is threadably attached to the leading end of the mandrel.
12. The method of claim 8 wherein the nosepiece is integrally formed with the mandrel.

13. The method of claim 1 wherein the foam body comprises a foamable elastomer.

14. The method of claim 13 wherein the foamable elastomer comprises an open-cell foam.

15. The method of claim 14 wherein the open-cell foam is made from a material selected from the group consisting of: natural rubber, nitrile rubber, styrene butadiene rubber, and polyurethane.

16. The method of claim 15 wherein the open-cell foam is a low-density foam.

17. The method of claim 8 wherein the nosepiece has a tapered leading end.

18. The method of claim 1 wherein the foam body has a substantially cylindrical shape.

19. The method of claim 18 wherein the foam body has an outer diameter and a length, and wherein the outer diameter of the foam body is substantially constant along its length.

20. The method of claim 18 wherein the foam body has an outer diameter and a length, and wherein the outer diameter of the foam body varies along its length.

21. The method of claim 20 wherein the foam body comprises a rib or a fin.

22. The method of claim 8 wherein the nosepiece is configured with at least one uniquely shaped key that will selectively engage with a matching uniquely shaped profile within the receiving configuration in the subterranean plug.

23. The method of claim 22 wherein the subterranean well bore comprises at least one additional plug, further comprising the step of introducing at least one additional dart into a receiving configuration of the at least one additional plug, wherein the nosepiece of the at least one additional plug is configured with at least one uniquely shaped key that will selectively engage with a matching uniquely shaped receiving configuration within the subterranean plug.

24. The method of claim 23 wherein the receiving portion of each plug has a common minimum inner diameter.

25. The method of claim 8 wherein the nosepiece is configured with a latch down profile that will latch into a matching profile within the receiving configuration within the subterranean plug.

26. The method of claim 8 wherein the nosepiece is coated with an elastomeric compound.

27. The method of claim 8 wherein the nosepiece comprises a seal ring.

28. The method of claim 8 wherein the well bore further comprises at least one pipe string, wherein each of the at least one pipe strings has an inner diameter, wherein the nosepiece and the mandrel when combined together have an effective combined length, and wherein their effective combined length exceeds the largest inner diameter of the at least one pipe string.

29. The method of claim 2 wherein the well bore further comprises at least one pipe string, wherein the foam body has an outer surface, and wherein the outer surface of the foam body engages the inner diameter of the at least one pipe string as it travels through the at least one pipe string.

30. The method of claim 29 wherein the at least one pipe string has a length, and wherein the inner diameter of the at least one pipe string varies along its length.

31. The method of claim 8 wherein the nosepiece has an outer diameter, and wherein the outer diameter of the nosepiece is smaller than the outer diameter of the foam body.

32. The method of claim 25 wherein the latch down profile comprises a self-energized device.

33. The method of claim 32 wherein the self-energized device is selected from the group consisting of: a "C" ring, and a collet type latch ring.

34. The method of claim 2 wherein the well bore further comprises at least one pipe string; wherein each of the at least one pipe strings has an inner diameter; wherein the mandrel of the dart comprises a drillable material; wherein the dart further comprises an elastic tether attached to the mandrel and to the foam body; wherein a leading end of the mandrel comprises a nosepiece, the nosepiece being configured to sealingly engage within a receiving configuration in the subterranean plug; wherein the nosepiece comprises a drillable material; wherein the foam body comprises a foamable elastomer; wherein the nosepiece and the mandrel when combined together have an effective combined length, and wherein their effective combined length exceeds the largest inner diameter of the at least one pipe string; wherein the foam body has an outer

surface, and wherein the outer surface of the foam body engages the inner diameter of the at least one pipe string as it travels through the at least one pipe string.

35. A dart for activating a subterranean plug located within a subterranean well bore comprising: a mandrel; and a foam body attached to the mandrel.

36. The dart of claim 35 wherein a leading end of the mandrel further comprises a nosepiece, the nosepiece being configured to sealingly engage in a receiving configuration in the subterranean plug.

37. The dart of claim 36 wherein the nosepiece is threadably attached to the mandrel.

38. The dart of claim 36 wherein the nosepiece is integrally formed with the mandrel.

39. The dart of claim 36 wherein the nosepiece is configured with at least one uniquely shaped key that will selectively engage with a matching uniquely shaped profile in the receiving configuration in the subterranean plug.

40. The dart of claim 36 wherein the nosepiece is configured with a latch down profile that will latch into a matching profile within the receiving configuration in the subterranean plug.

41. The dart of claim 36 wherein the nosepiece comprises a drillable material.

42. The dart of claim 41 wherein the drillable material is selected from the group consisting of: aluminum, plastic, brass, a phenolic, a high-strength thermoplastic, glass, and a composite.

43. The dart of claim 35 further comprising an elastic tether attached to the mandrel and to the foam body.

44. The dart of claim 35 wherein the foam body comprises a foamable elastomer.

45. The dart of claim 44 wherein the foamable elastomer comprises an open-cell foam.

46. The dart of claim 45 wherein the open cell foam is made from a material selected from the group consisting of: natural rubber, nitrile rubber, styrene butadiene rubber, and polyurethane.

47. The dart of claim 46 wherein the open-cell foam is a low density foam.

48. The dart of claim 36 wherein the nosepiece has a tapered leading end.

49. The dart of claim 35 wherein the mandrel comprises a drillable material.

50. The dart of claim 49 wherein the drillable material is selected from the group consisting of: aluminum, plastic, brass, a phenolic, a high-strength thermoplastic, glass, and a composite.

51. The dart of claim 35 wherein the foam body has a substantially cylindrical shape.

52. The dart of claim 51 wherein the foam body has an outer diameter and a length, the outer diameter being substantially constant along the length of the foam body.

53. The dart of claim 36 wherein the nosepiece has an outer diameter, and wherein the outer diameter of the nosepiece is smaller than the outer diameter of the foam body.

54. The dart of claim 51 wherein the foam body has an outer diameter and a length, the outer diameter varying along the length of the foam body.

55. The dart of claim 54 wherein the foam body comprises a rib or fin.

56. The dart of claim 36 wherein the nosepiece is coated with an elastomeric compound.

57. The dart of claim 36 wherein the nosepiece comprises a seal ring.

58. The dart of claim 36 wherein the well bore further comprises at least one pipe string, wherein each of the at least one pipe strings has an inner diameter, wherein the nosepiece and the mandrel when combined together have an effective combined length, and wherein their effective combined length exceeds the largest inner diameter of the at least one pipe string.

59. The dart of claim 35 wherein the foam body has an outer surface, and wherein the outer surface of the foam body is capable, when placed within a well bore comprising at least one pipe string having an inner diameter and a length, of engaging the inner diameter of the at least one pipe string at any point along the length of the at least one pipe string.

60. The dart of claim 59 wherein the inner diameter of the at least one pipe string varies along its length.

61. The dart of claim 40 wherein the latch down profile comprises a self-energized device.

62. The dart of claim 61 wherein the self-energized device is selected from the group consisting of: a “C” ring, and a collet type latch ring.

63. The dart of claim 43 wherein the elastic tether is made from a material selected from the group consisting of: natural rubber, a synthetic elastomeric rubber, polyurethane, and elastic fabrics.

64. The dart of claim 36 further comprising an elastic tether attached to the mandrel and to the foam body; wherein the nosepiece and the mandrel each comprise a drillable material; wherein the foam body comprises a foamable elastomer; wherein the nosepiece and the mandrel each have a length, and wherein the sum of their lengths exceeds the largest inner diameter of at least one pipe string within a subterranean well bore when the dart is placed therein; wherein the foam body has an outer surface, and wherein the at least one pipe string has a length, and wherein the outer surface of the foam body is capable of engaging the inner diameter of the at least one pipe string at any point along the length of the at least one pipe string.